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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,283	03/29/2004	Jack A. Mandelman	FIS920000224US1 (13814AZ)	2253
23389 7590 09/08/2008 SCULLY SCOTT MURPHY & PRESSER, PC 400 GARDEN CITY PLAZA SUITE 300 GARDEN CITY, NY 11530			EXAMINER LEWIS, MONICA	
			ART UNIT 2894	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/812,283	Applicant(s) MANDELMAN ET AL.	
	Examiner Monica Lewis	Art Unit 2894	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 June 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 57-62 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 57-62 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to the response filed June 4, 2008.

Specification

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 57-59 and 62 are rejected under 35 U.S.C. 103(a) as obvious over Schrems et al. (U.S. Patent No. 5,945,704) in view of Gambino (U.S. Patent No. 6,174,756) and Bronner et al. (U.S. Patent No. 5,525,531).

In regards to claim 57, Schrems discloses the following:

a) at least one array region having at least one wordline (120) formed therein (For Example: See Figure 1 and Column 3 Lines 28-43); and

b) an isolation region (180) (For Example: See Figure 1 and Column 3 Lines 28-43).

In regards to claim 57, Schrems fails to disclose the following:

a) one support region having a local interconnect formed therein.

However, Gambino discloses a support region (110) with an interconnect (For Example: See Figure 1A). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Schrems to include a support region with an interconnect as disclosed in Gambino because it aids in providing an efficient formation of an integrated circuit (For Example: See Column 1 Lines 65 and 66 and Column 2 Lines 1-11).

Additionally, since Schrems and Gambino are both from the same field of endeavor, the purpose disclosed by Gambino would have been recognized in the pertinent art of Schrems.

b) at least one wordline and said local interconnect are comprised of identical material.

However, Bronner et al. (“Bronner”) discloses a wordlines and interconnects made of the same material (For Example: See Column 3 Lines 44-67). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Schrems to include wordlines and interconnects made of the same material as disclosed in Bronner because it aids in providing low capacitance (For Example: See Column 1 Lines 5-18).

Additionally, since Schrems and Bronner are both from the same field of endeavor, the purpose disclosed by Bronner would have been recognized in the pertinent art of Schrems.

In regards to claim 58, Schrems discloses the following:

a) array region includes a plurality of DRAM cells embedded in a semiconductor substrate (For Example: See Figure 1 and Column 3 Lines 28-30).

In regards to claim 59, Schrems discloses the following:

a) each of said DRAM cells are vertical DRAMs (For Example: See Figure 1).

In regards to claim 62, Schrems discloses the following:

a) an identically layered stack having top surfaces which are approximately coplanar (For Example: See Figure 1).

In regards to claim 62, Schrems fails to disclose the following:

a) at least one wordline and said local interconnect are comprised of identical material.

However, Bronner discloses a wordlines and interconnects made of the same material (For Example: See Column 3 Lines 44-67). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Schrems to include wordlines and interconnects made of the same material as disclosed in Bronner because it aids in providing low capacitance (For Example: See Column 1 Lines 5-18).

Additionally, since Schrems and Bronner are both from the same field of endeavor, the purpose disclosed by Bronner would have been recognized in the pertinent art of

5. Claims 60 and 61 are rejected under 35 U.S.C. 103(a) as obvious over Schrems et al. (U.S. Patent No. 5,945,704) in view of Gambino (U.S. Patent No. 6,174,756), Bronner et al. (U.S. Patent No. 5,525,531) and *Microchip Fabrication* by Peter Van Zant.

In regards to claim 60, Schrems fails to disclose the following:

a) at least one wordline and said local interconnect are comprised of identical material.

However, Bronner discloses a wordlines and interconnects made of the same material (For Example: See Column 3 Lines 44-67). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of

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Schrems to include wordlines and interconnects made of the same material as disclosed in Bronner because it aids in providing low capacitance (For Example: See Column 1 Lines 5-18).

Additionally, since Schrems and Bronner are both from the same field of endeavor, the purpose disclosed by Bronner would have been recognized in the pertinent art of Schrems.

b) a W/WN stack.

However, Van Zant discloses the use of tungsten (For Example: See Page 403). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Schrems to include tungsten as disclosed in Van Zant because it aids in providing a low contact resistance (For Example: See Page 403).

Additionally, since Schrems and Van Zant are both from the same field of endeavor, the purpose disclosed by Van Zant would have been recognized in the pertinent art of Schrems.

In regards to claim 61, Schrems fails to disclose the following:

a) wordline and said local interconnect comprises a SiN cap.

However, Van Zant discloses the use of SiN (For Example: See Page 391). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Schrems to include SiN as disclosed in Van Zant because it aids in providing better protection (For Example: See Page 391).

Additionally, since Schrems and Van Zant are both from the same field of endeavor, the purpose disclosed by Van Zant would have been recognized in the pertinent art of Schrems.

Response to Arguments

6. Applicant's arguments filed 9/4/08 have been fully considered but they are not persuasive. First, Applicant argued that "Schrems et al...does not teach or suggest the limitation of a support region...in which at least one wordline and the interconnect are comprised of identical material." However, Schrems is not being utilized to teach the limitations disclosed above.

Second, Applicant argued that "Gambino et al...fails to teach or suggest teach...where the wordline and interconnect are comprised of identical material." However, Gambino is not being utilized to teach the limitations disclosed above.

Third, Applicant argued that "gate oxide 160 into gate stack 115 results in a gate conductor that is not in direct contact with the substrate surface and is therefore not an interconnect structure." However, Applicant is arguing limitations that are not present in the claims.

Fourth, Applicant argued that "Bonner...fails to teach or suggest a local interconnect formed in a support region." However, Bronner is not being utilized to teach the limitations disclosed above.

Fifth, Applicant argued that "since the array region consists of composite structures 310, 315 and the support region consists solely of layer 310; Bonner et al. fails to disclose where at least one wordline and said local interconnect are comprised of identical material." However, it is not clear what Applicant is arguing because 310 and 315 are found in both regions (For Example: See Figure 4). Bronner discloses wordlines and interconnects made of the same material (For Example: See Column 3 Lines 44-67).

Finally, Applicant argued that “Peter Van Zant does not teach at least one support region having a local interconnect formed therein, where at least the wordline and interconnect are comprised of identical material.” However, Van Zant is not being utilized to teach the limitations disclosed above.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica Lewis whose telephone number is 571-272-1838. If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Kimberly Nguyen can be reached on 571-272-2402. The fax phone number for the organization

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where this application or proceeding is assigned is 571-273-8300 for regular and after final communications.

/Monica Lewis/

Primary Examiner, Art Unit 2894

September 3, 2008